

FIG. 1A

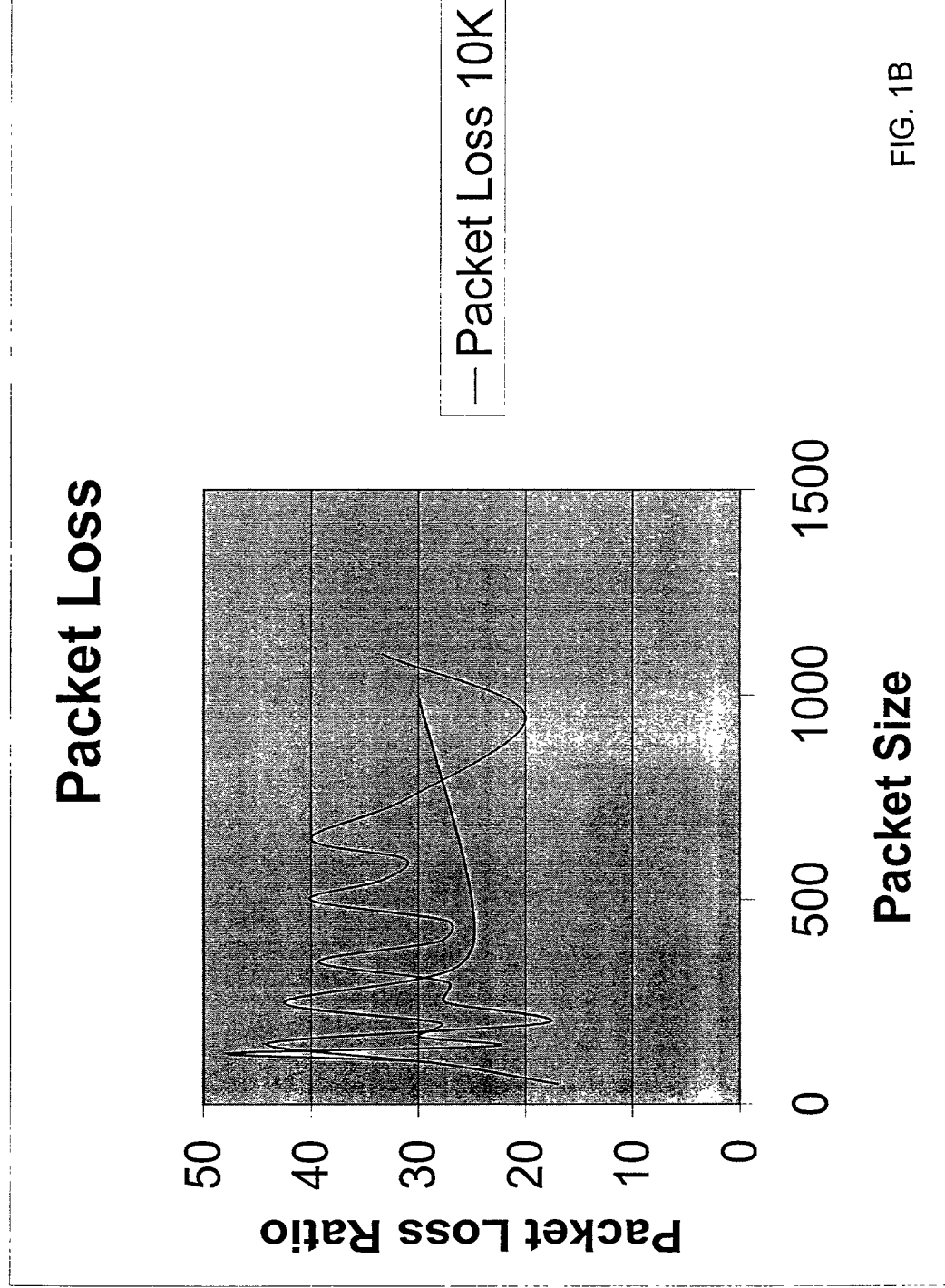
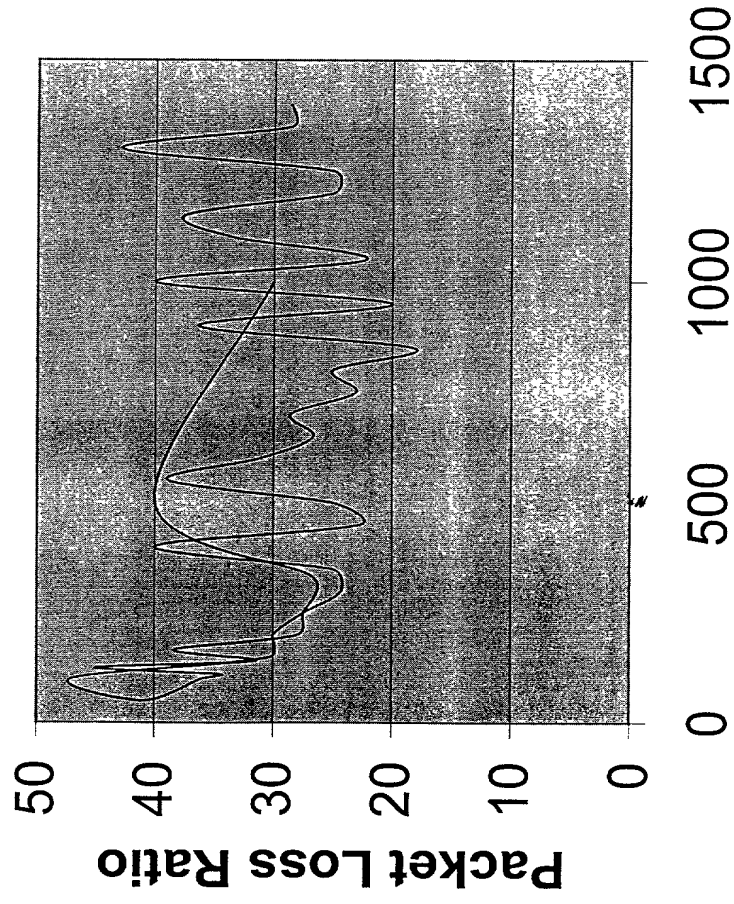


FIG. 1B

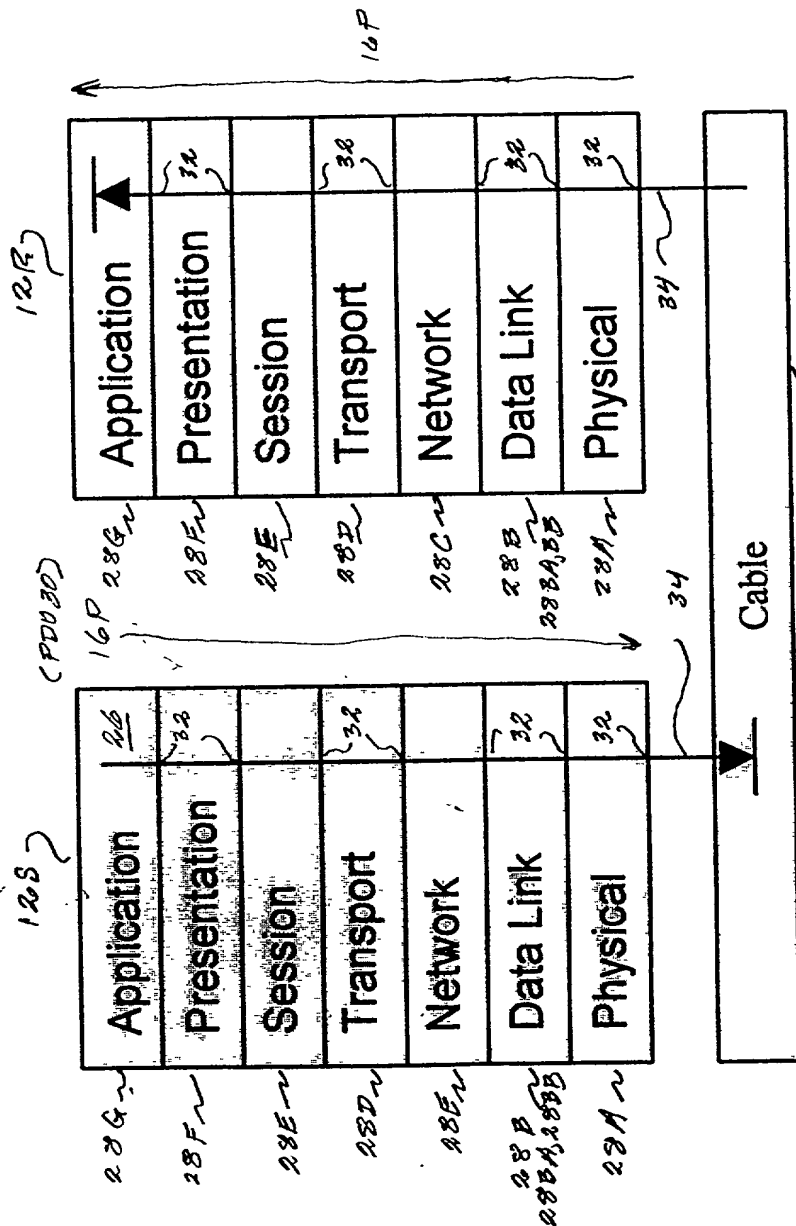
Packet Loss



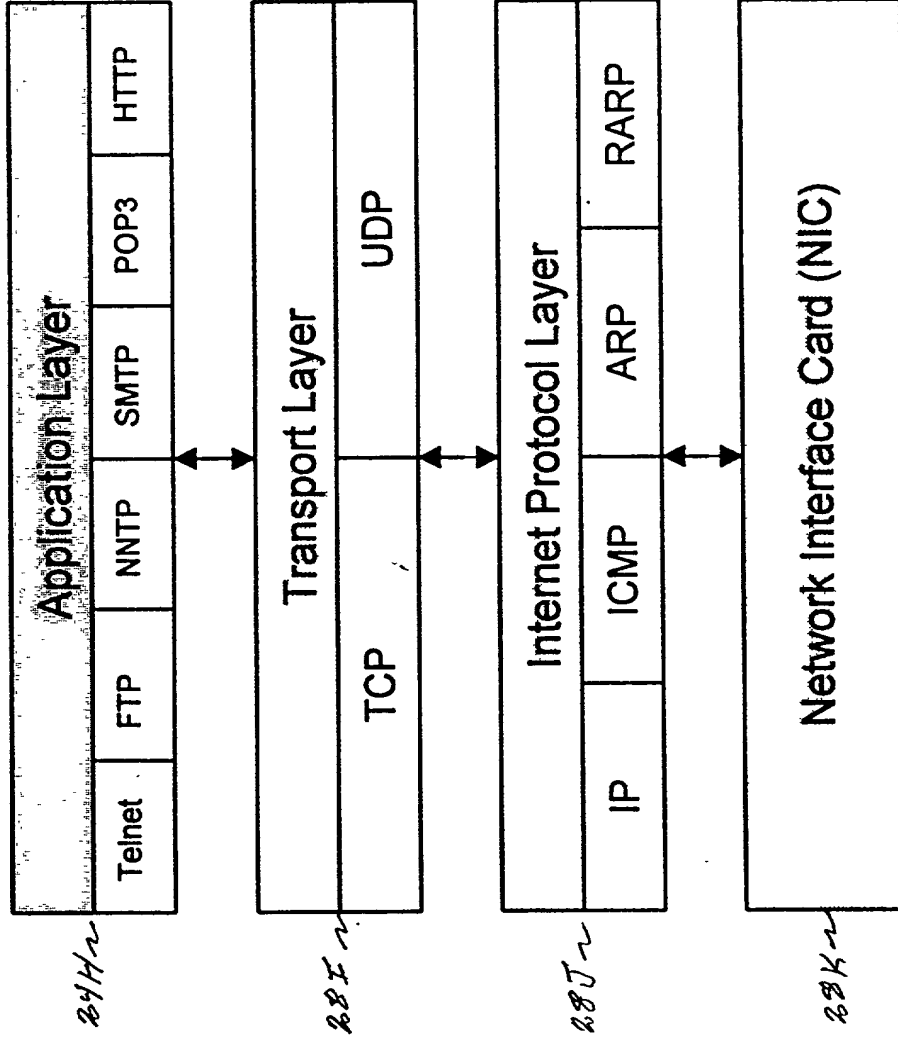
— Wireless Network

Packet Size

FIG. 1C

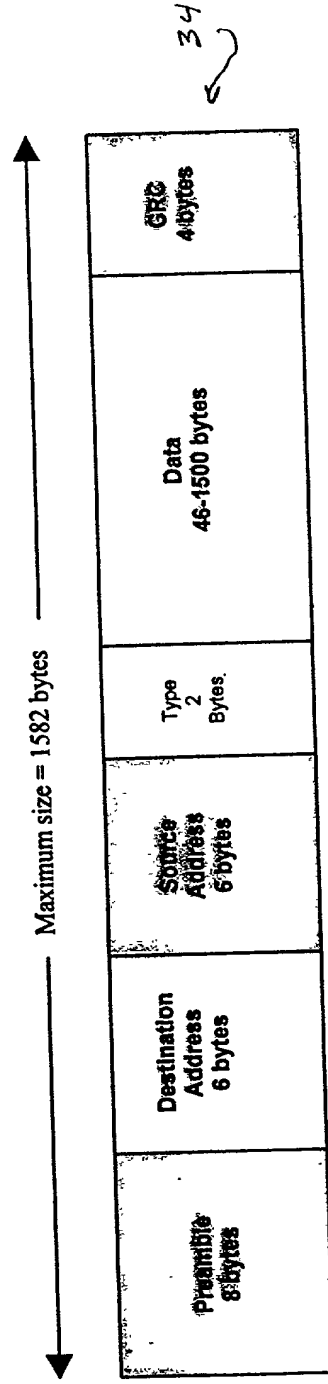


OSI Model 240 Fig. 3



TCP/IP Model 247

Fig. 4



Ethernet Frame (Network Layer) – TCP/IP Protocol

Fig. 5

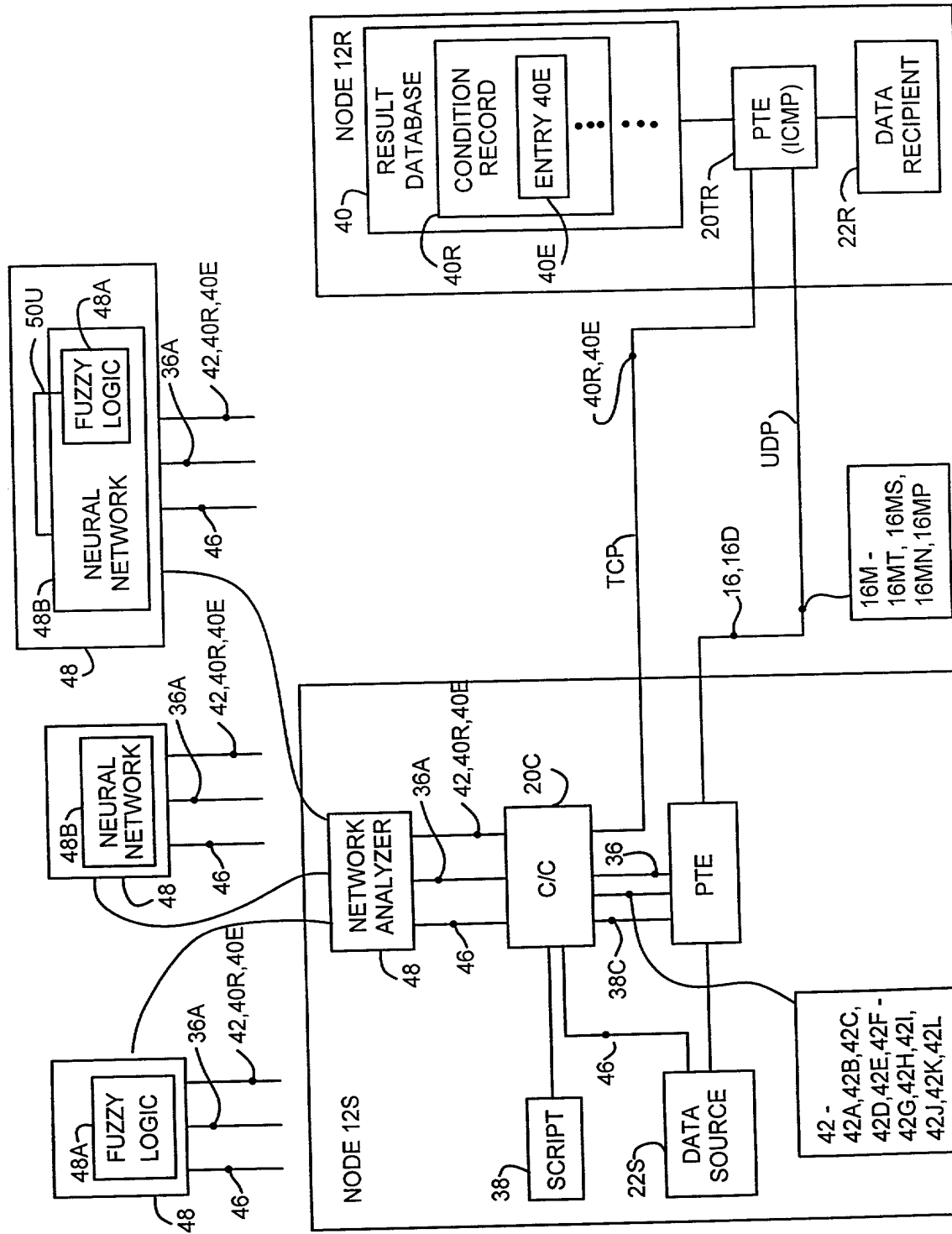


FIG. 6A

Test Schedule Script File 38

Header Name	Value	Description
Test Type	Net Condition	Records tests of 10 28 bytes packet transmission at a specified inter-packet delay.
	Data Transfer	Records test of packets with a forced payload size or forced packet count at a specified inter-packet delay.
IP Protocol	UDP	UDP protocol provides minimal transmission delay because it excludes the connection setup process, flow control and retransmission – no error checking performance.
Send Mode	TXRX	Net Condition test send mode
Send IP Address		Sender's IP address
Send IP Port	-1	Negative number indicates IP stack chooses the sending port
Send Embed Offset Sec		Padding
Recv Mode	Echo	Net Condition receive mode -- test always functions in a loop
	Recv	Data Transfer receive mode -- data is transmitted one way.
Rec IP Address		Receiver's IP address
Recv IP Port	5551	Net Condition test port ID
	5552	Data Transfer test port ID
Recv Embed Offset Sec		Padding
Force Payload Size	28	Net Condition test packet sizes
	10-1400	Data Transfer test packet sizes
Force Packet Count	10-100	Data Transfer test packet breakdown
Inter-packet Delay ms	arbitrary	Inter-packet delay for Net Condition and Data Transfer tests are determined by TSSF.
Loop and Restart	Net Condition	Yes – data transfer is constantly repeated
	Data Transfer	No – data transfer is not repeated

FIG. 6B

FIG. 6B

NETWORK CONDITION RECORD 40R

- 44A - **packet number** - the number of packets that were sent for the whole data
- 44B - **payload** - the size of a sent packet in bytes
- 44C - **totalbytes** - the total aggregate bytes of the combined payloads that represent the total data
- 44D - **Interpacketdelay_ms** - the time spacing of packets sent (in ms)
- 44E - **elapsedtime_sec** - the duration the listener ran
- 44F - **packetsIN** - the # of packets received IN by listener per TRANSFER
- 44G - **packetsOUT** - the # of packets sent OUT by listener per TRANSFER
- 44H - **bytesIN** - the bytes received in per transfer
- 44I - **bytesOUT** - the bytes sent out per transfer
- 44G - **bytesIN/sec** - the rate of bytes
- 44H - **bytesOUT/sec** - the rate of bytes OUT
- 44I - **packetsIN/sec** - the rate of packets IN
- 44J - **packetsOUT/sec** - the rate of packets OUT
- 44K - **numreads** - the number of attempted reads from socket
- 44L - **numreadsblocked** - the number of reads to socket having nothing to read
- 44M - **numkrnlreaderrs** - the number of read errors (e.g. MAC layer failure; helpful to show wireless network blackout conditions)
- 44N - **numwrites** - the number of attempted writes to socket
- 44O - **numwritesblocked** - the number of writes to socket unable to send out (shows that network is clogged; IP stack unable to accept more)
- 44P - **numkernelwriteerros** - the number of write errors (see note on MAC layer)
- 44Q - **numkernelunspecifiederrors** - the number of unknown errors
- 44R - **jitter avg sec** - the avg jitter
- 44S - **jitter max sec** - the max jitter
- 44T - **jitter min sec** - the min jitter
- 44U - **packet loss** - packets not received (the packet loss)
- 44V - **% loss** - percentage of loss out of total
- 44W - **pass sequence** - # of packets in sequence (by checking the incremental sequence ID on each packet. Next packet ID is current ID + 1)
- 44X - **fail sequence** - # of packets not in precise sequence
- 44Y - **% out of sequence** - percentage of packets out of sequence out of total
- net condition 2-way delay average** - the two-way, round trip packet delay as measured in seconds, to microsecond precision. The average value across all packets received during the specific data transfer and its time frame.
- 44Z - **net condition 2-way delay max** - the max of the delay value for the network condition
- 44AA- **net condition 2-way delay min** - the min of the delay value for the network condition
- 44AB -**net condition jitter avg sec** - the average jitter for the network condition
- 44AC -**trendupordown** - the change of the delay during the test
(+ means the delay was increasing during the test, - means it was decreasing)

FIG. 6C